03050103-010

(Catawba River)

General Description

Watershed 03050103-010 is located in York, Lancaster, and Chester Counties and consists primarily of the ***Catawba River*** and its tributaries through to the Cedar Creek Dam. The watershed occupies 105,176 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Wilkes-Herndon-Helena-Georgeville series. The erodibility of the soil (K) averages 0.28; the slope of the terrain averages 10%, with a range of 2-25%. Land use/land cover in the watershed includes: 68.7% forested land, 11.3% urban land, 7.6% water, 6.7% agricultural land, 5.1% scrub/shrub land, and 0.6% barren land.

The Catawba River flows through the Catawba Dam on Lake Wylie (03050101-180) near the Town of Fort Mill, and is joined by Johnnytown Branch, Big Dutchman Creek (Little Dutchman Creek), Dye Branch (Jones Branch), Manchester Creek, and Burgis Creek (all originating near the City of Rock Hill) before accepting drainage from the Sugar Creek watershed (03050103-020). Downstream from the Sugar Creek drainage, the Catawba River flows past the Catawba Indian Reservation and is joined by Haggins Branch, Sixmile Creek (Barber Creek), Ferry Branch, Abernathy Creek, Greene Creek, and the Twelvemile Creek watershed (03050103-030). The Landsford Canal connects the bend in the river where Twelvemile Creek enters. Further downstream, the river accepts the drainage of Rock Water Spring Branch, Dunn Creek, and the Cane Creek watershed (03050103-040) near the Town of Fort Lawn. The Catawba River then flows into Fishing Creek Reservoir, which is impounded by the Fishing Creek Dam. Bear Creek forms an arm of the reservoir.

The Catawba River is dammed again just downstream of the Fishing Creek Dam and the flow diverted to form Great Falls Reservoir. The retention time for Great Falls Reservoir is approximately one day, and essentially functions as an expanded area of the diverted Catawba River. The Fishing Creek watershed (03050103-060) drains into Great Falls Reservoir just below the Fishing Creek Dam. Great Falls Reservoir is impounded by the Dearborn Dam, and together with the Cedar Creek Dam downstream serve to back the water up into the true Catawba River bed to form Cedar Creek Reservoir. The section of the Catawba River upstream of Cedar Creek Reservoir and downstream of the Catawba River Diversion Dam is dry and serves as an emergency spillway. Great Falls Reservoir also has a dam between it and this dry section used for periods of flood. The Camp Creek watershed (03050103-080) drains into this section and forms a ponded area.

The Rocky Creek watershed (03050103-090) drains into the section of Cedar Creek Reservoir between the Dearborn Dam and the Cedar Creek Dam. Debutary Creek drains into and forms an arm of Cedar Creek Reservoir just above the Cedar Creek Dam. Duke Power Company oversees the operation of these reservoirs, and they are used for power generation as well as recreation. Fishing Creek Reservoir is also used for water supply. There are a total of 221.3 stream miles and 4,048.7 acres of lake waters in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
CW-221	S	FW	CATAWBA RIVER TRIBUTARY AT HWY. 161 0.4 MI W OF I-77
CW-014	P	FW	CATAWBA RIVER AT US 21
CW-041	P	FW	CATAWBA RIVER AT SC 5 ABOVE BOWATER
CW-016	P	FW	CATAWBA RIVER AT SC 9 AT FORT LAWN
CW-016F	P	FW	FISHING CREEK RESERVOIR 2 MI BELOW CANE CREEK
CW-057	P	FW	FISHING CREEK RES. 75 FT ABOVE DAM NEAR GREAT FALLS
CW-174	S	FW	CATAWBA R. AT UNIMPROVED RD ABOVE JUNCTION W/ROCKY CK
CW-033	W	FW	CEDAR CREEK RESERVOIR 100 METERS NORTH OF DAM

Catawba River - There are four monitoring sites along this section of the Catawba River. Aquatic life uses are fully supported at the furthest upstream site ***(CW-014)***; however there was a high concentration of copper measured in 1997 and a very high concentration of zinc measured in 1996. Recreational uses are fully supported.

Further downstream ***(CW-041)***, aquatic life uses are also fully supported and significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentrations suggest improving conditions for these parameters. There is a significant decreasing trend in pH. The pesticides chlordane and P,P'DDT were detected in the 1995 sediment sample. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Aquatic life uses are also fully supported at ***CW-016***, but there is a significant increasing trend in total phosphorus concentrations and a high concentration of zinc measured in 1995. A significant decreasing trend in total suspended solids suggest improving conditions for this parameter. Recreational uses are fully supported.

Downstream of Fishing Creek Reservoir ***(CW-174)***, aquatic life uses are fully supported and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. There is a significant decreasing trend in pH. Recreational uses are partially supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Catawba River Tributary (CW-221) - Aquatic life uses are fully supported. There is a significant decreasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

Fishing Creek Reservoir -There are two monitoring sites along Fishing Creek Reservoir, which has a watershed covering 820.3 km² within South Carolina (up to the Lake Wylie Dam), a surface area of 1363.8 hectares, and a maximum and mean depth of 27.3m and 7.2m, respectively. Aquatic life uses are fully supported at the uplake site ***(CW-016F)***; however there are significantly increasing trends in total phosphorus concentrations, total nitrogen concentrations, and turbidity. A high concentration of zinc was measured in 1994. In addition, high phosphorus concentrations and low transparency indicate the potential for adverse impacts to aquatic life due to eutrophication. High concentrations of copper were measured in the 1995, 1996, 1997, and 1998 sediment samples. Also in sediment, very high concentrations of zinc were measured in 1996 and 1998, and high concentrations were measured in 1995 and 1997. The

pesticide P,P'DDT was detected in 1995, O,P'DDE (a metabolite of DDT) in 1994, and P,P'DDE (another metabolite of DDT) was detected in the 1998 sediment sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are fully supported.

Downlake at ***CW-057***, aquatic life uses are fully supported; however there is a significant increasing trend in turbidity. In addition, elevated phosphorus concentrations and low transparency indicate the potential for adverse impacts to aquatic life due to eutrophication. In sediments, a very high concentration of chromium was measured in 1994, and high concentrations were measured in 1995, 1996, 1997, and 1998. Very high concentrations of copper and zinc were measured in all five sediment samples from 1994 through 1998. High concentrations of lead were also measured in the 1994 and 1995 sediment samples. A high concentration of mercury was measured in the 1995 sediment sample. Nickel was very high in the 1994 sediment sample, and high in 1995, 1996, and 1997. PCB-1248 was detected in the 1998 sediment sample. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Cedar Creek Reservoir (CW-033) - Cedar Creek Reservoir has a watershed encompassing 1,468 km^2 (up to the Fishing Creek Reservoir Dam), a surface area of 323.8 hectares, and a maximum and mean depth of 10.7m and 8.8m, respectively. The average annual retention time for the lake is 2 days. Although there was a pH excursion, due to the small number of samples, aquatic life use support determination is inconclusive. Elevated phosphorus concentrations indicate the potential for adverse impacts to aquatic life due to eutrophication. Recreational uses are fully supported.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
CATAWBA RIVER	SC0001015
BOWATER, INC.	MAJOR INDUSTRIAL
PIPE #: 01A,001,003,004,005 FLOW: M/R	WATER QUALITY
WQL FOR BOD_5, DO	
CATAWBA RIVER	SC0001783
CELANESE ACETATE LLC/CELRIVER (HOECHST CELANESE)	MAJOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	WQL FOR NH3-N, TRC, DO
PIPE #: 002 FLOW: M/R	EFFLUENT
PIPE #: 003 FLOW: M/R	WQL FOR DO
CATAWBA RIVER	SC0003255
SPRINGS IND./GRACE COMPLEX	MAJOR INDUSTRIAL
PIPE #: 001,01A,002 FLOW: M/R	EFFLUENT
PIPE #: 003 FLOW: M/R	WQL FOR DO, NH3-N

CATAWBA RIVER	SC0020443
CITY OF ROCK HILL/MANCHESTER CREEK PLT	MAJOR DOMESTIC
PIPE #: 001 FLOW: 20.0	WATER QUALITY
WQL FOR BOD_5, NH3-N, TRC, DO	
CATAWBA RIVER	SC0020371
TOWN OF FORT MILL WWTP	MAJOR DOMESTIC
PIPE #: 001 FLOW: 1.5	EFFLUENT
PIPE #: 001 FLOW: 2.0-3.0 (PROPOSED)	WQL FOR BOD5, DO
CATAWBA RIVER	SC0046892
CITY OF LANCASTER/MAIN PLANT	MAJOR DOMESTIC
PIPE #: 001 FLOW: 7.5	WATER QUALITY
WQL FOR NH3-N, DO	
CATAWBA RIVER	SC0027391
LANCASTER COUNTY P&D/FOSTER PLT	MINOR INDUSTRIAL
PIPE #: 001 FLOW: 0.053	EFFLUENT
CATAWBA RIVER	SC0047864
LANCASTER COUNTY WWTP	MAJOR DOMESTIC
PIPE #: 001 FLOW: 4.0	WATER QUALITY
WQL FOR DO; UNCONSTRUCTED	
CATAWBA RIVER	SC0035360
NATION FORD CHEMICAL CO. (R-M INDUSTRIES)	MAJOR INDUSTRIAL
PIPE #: 01A FLOW: M/R	EFFLUENT
PIPE #: 01B FLOW: M/R	EFFLUENT
CATAWBA RIVER	SCG641013
LANCASTER COUNTY/CATAWBA RIVER WTP	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.698	EFFLUENT
CATAWBA RIVER	SCG645008
CITY OF ROCK HILL/ WTP	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.698	EFFLUENT
CATAWBA RIVER	SCG641008
CITY OF CHESTER/FT LAWN WTP	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.698	EFFLUENT
CATAWBA RIVER (CEDAR CREEK RES.)	SC0021211
TOWN OF GREAT FALLS/WWTP	MAJOR DOMESTIC
PIPE #: 001 FLOW: 1.4	EFFLUENT
CATAWBA RIVER TRIBUTARY	SCG250135
SPRINGS IND./WHITE PLANT	MINOR INDUSTRIAL
PIPE #: 001 FLOW: 0.004	EFFLUENT
CATAWBA RIVER TRIBUTARY	SCG250111

INCHEM CORP.	MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	EFFLUENT
CATAWBA RIVER TRIBUTARY	SCG250137
SPRINGS IND./FT LAWN COMPLEX	MINOR INDUSTRIAL
PIPE #: 001 FLOW: 0.011	EFFLUENT
PIPE #: 002 FLOW: 0.011	
PIPE #: 003 FLOW: 0.011	
BIG DUTCHMAN CREEK	SC0035661
WOODFOREST SD/WWTP	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.039	WATER QUALITY
WQL FOR NH3-N, TRC, DO	
MANCHESTER CREEK	SCG250142
INLAND PAPERBOARD & PACKAGING	MINOR INDUSTRIAL
PIPE #: 001 FLOW: 0.024	EFFLUENT
BURGIS CREEK TRIBUTARY	SC0028622
QUAIL MEADOW PARK	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.025	WATER QUALITY
WQL FOR BOD_5, NH3-N, TRC, DO	
BARBER CREEK	SC0027189
UTILS. OF SC/SHANDON SD	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.014	WATER QUALITY
WQL FOR NH3-N, TRC, DO	
ABERNATHY CREEK	SC0032417
CEDAR VALLEY MHP	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.03	WATER QUALITY
WQL FOR NH3-N, TRC, DO	
FISHING CREEK RESERVOIR	SC0029572
REPUBLIC FASTENER PRODUCTS	MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	EFFLUENT

Nonpoint Source Management Program

Camping Facilities

FACILITY NAME/TYPE	***PERMIT #***
RECEIVING STREAM	***STATUS***
BOWATER PARK CAMPGROUND/FAMILY	46-307-0186
CATAWBA RIVER	ACTIVE

Mining Activities

MINING COMPANY	***PERMIT #***
MINE NAME	***MINERAL***
ASHE DIV., BORAL BRICKS, INC.	0523-57
YODER PIT #2	CLAY

Land Disposal Activities

Landfill Facilities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
TOWN OF GREAT FALLS CONSTRUCTION	121002-1201 (121002-1201, CLOSED CWP-012, DWP-903)
HOECHST CELANESE CORP. INDUSTRIAL	463312-1601 (IWP-138) ACTIVE
BOWATER, INC. INDUSTRIAL	463318-1601 (IWP-141) ACTIVE
LANDFILL INC. INDUSTRIAL	IWP-105 ---

Groundwater Contamination

The groundwater in the vicinity of the property owned by Rock Hill Chemicals - Rutledge Property (#SCD980844005) is contaminated with volatile organic compounds from spills, leaks, and unpermitted disposal. The contamination plume is discharging to a unnamed tributary of the Catawba River. The facility is a USEPA site, and is currently in the remediation phase.

Water Supply

WATER USER (TYPE) *STREAM*	*REGULATED CAPACITY (MGD)* *PUMPING CAPACITY (MGD)*
CHESTER METRO (M) CATAWBA RIVER	7.2 12.0
SPRINGS IND.-GRACE BLEACHERY (M) CATAWBA RIVER	30.4 40.2
SPRINGS IND.-GRACE BLEACHERY (I) CATAWBA RIVER	20.0 ---
CITY OF ROCK HILL (M) CATAWBA RIVER	10.0 14.0
BOWATER, INC. (I) CATAWBA RIVER	30.0 ---
HOECHST CELANESE CORP. (M) CATAWBA RIVER	7.0 7.2
HOECHST CELANESE CORP. (I) CATAWBA RIVER	72.0 ---
RM INDUSTRIES, INC. (I)	1.08

CATAWBA RIVER	-----
CATAWBA WTP (M)	14.0
CATAWBA RIVER	21.0

Growth Potential

Portions of the Cities of Rock Hill and Fort Mill are included in the upper portion of the watershed, and are relatively densely developed. On the Fort Mill side of the Catawba River, there is a relatively wide floodplain which will limit development adjacent to the river. Water and sewer service is available to most of the area on this side of the river, which includes a large portion of the Town of Fort Mill and the residential area west of the town. Potential growth areas include expansion around Fort Mill and the commercial and industrial development around the I-77/S.C. Hwy. 160 interchange. On the Rock Hill side of the river, there is extensive residential development in the city and to the north, with other developed residential areas to the east in the Friendship and Lesslie communities. Industrial areas have developed to the east of Rock Hill, and the large Bowater paper mill complex is located to the south. Extension of a water line from Rock Hill to the Bowater Facility has been completed, and will provide opportunities for higher density development in the area.

Portions of the Towns of Fort Lawn and Great Falls are located in the lower portion of this watershed. There is a concentrated area of industrial development along S.C. Hwy. 9 between Fort Lawn and the City of Lancaster, and there is a limited residential development along the shoreline of Fishing Creek. There is public water and sewer service in the Towns of Fort Lawn and Great Falls and water along S.C. Hwy. 9 and portions of U.S. Hwy. 21, but growth prospects are limited. Preliminary discussions by the Tri-County Wastewater Committee are being held concerning a possible regional sewer facility to be located on the Catawba River.

Crescent Resources, the real estate arm of Duke Energy, plans to develop a large mixed-use community along Fishing Creek Reservoir. The development would extend from S.C. Hwy. 9 down to S.C. Hwy. 200, within Lancaster County. The intention of the development company is to create "Catawba Ridge", a 16,000 home, densely populated residential area that would include commercial and industrial uses. Crescent Resources is also proposing development of the western side of Fishing Creek Reservoir.

Several additional factors will influence future development in the watershed. The presence of I-77 provides excellent access to the Charlotte urban area, encouraging residential, industrial, distribution, and commercial development. The proposed Dave Lyle Boulevard Extension will be built across the watershed and into Lancaster County, opening up large areas with good access to Rock Hill and I-77. The Rock Hill Economic Development Corporation is currently developing a major business park between I-77 and the Catawba River. Waterford will include areas for office, manufacturing, distribution, and residential uses, and will have an 18-hole golf course. The Catawba Indian Nation is continuing economic development along the river and its property. The many development factors, the presence of Rock Hill and Fort Mill, and the presence of I-77 with five full interchanges in this watershed all point to extensive growth over the next few years.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL for fecal coliform has been developed by DHEC and approved by EPA for **Catawba River tributary** water quality monitoring site CW-221. The TMDL states that a 19% reduction in fecal coliform loading from urban areas is necessary for the stream to meet the recreational use standard. Implementation of this nonpoint source TMDL will include the use of voluntary best management practices (BMPs) and other measures. Grant funding through SCDHEC may be available to aid in BMP implementation.

Special Projects

NPS Assessment and TMDL for Phosphorus in the Catawba River Basin

SCDHEC has contracted with the University of South Carolina to quantify relationships between land use and water quality in the Catawba River Basin. The project will evaluate these relationships using the WARMF model, which will be used to develop a TMDL for total phosphorus in Fishing Creek Reservoir, Cedar Creek Reservoir, and Lake Wateree. The TMDL is being developed in cooperation with the North Carolina Division of Water Quality and will involve stakeholders in the basin. Additional information about the TMDL development process can be found in Appendix B.

Cattle Ramp Demonstration

Sediments are a major component of NPS runoff in the Catawba River corridor. One source of the sediment runoff is from riparian areas that have been disturbed, such as cattle access to streams and other sources of water supply. The cattle movement produces unstable banks, leading to increased erosion. Fencing and a cattle ramp provide limited access to the waterbody, thus allowing the riparian zone to stabilize. Section 319 funds provided for demonstration of this BMP to farmers in York County. As a result of the field day held in conjunction with the project, eight local farmers applied for EQIP funds for cattle ramp installation on their property.